

WHAT IS CLAIMED IS:

1. A automotive heat exchanging system comprising:
 - a heat exchanger mounted in front of an engine and an automatic
 - 5 transmission and supplied with a coolant;
 - an electric fan which is located in a front of said automatic
 - transmission and ensures airflow through said heat exchanger;
 - a shroud attached to and covering peripheral portions of said
 - electric fan and said heart exchanger to form an air passage inside of said
 - 10 shroud for allowing airflow through said heat exchanger to flow toward
 - said automatic transmission;
 - a shutter disposed in and attached at a periphery thereof to said
 - shroud to open and close said air passage;
 - an oil temperature sensor sensing a temperature of oil in said
 - 15 automatic transmission and outputs an oil temperature signal;
 - a controller which controls opening and closing of said shutter
 - based on the oil temperature signal from said oil temperature sensor.
2. A automotive heat exchanging system as set forth in claim 1 in
- 20 which further comprises an oil warmer which is supplied with the coolant
- circulating through an engine and said heat exchanger and attached to the
- automatic transmission to warm the oil in said automatic transmission.
3. A automotive heat exchanging system as set forth in claim 1 in
- 25 which said electric fan is located behind of said heat exchanger, and said
- shutter being located between said heat exchanger and said electric fan.
4. A automotive heat exchanging system as set forth in claim 1 in
- which said electric fan is located behind said heat exchanger, and said
- 30 shutter being located behind said electric fan.
5. A automotive heat exchanging system as set forth in claim 1 in
- which said electric fan is located in front of said heat exchanger, and said
- shutter being located behind said shutter.
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6. A automotive heat exchanging system as set forth in claim 1
- which said controller controls said shutter to open fully for allowing air to

pass through said air passage when the oil temperature is more than a predetermined oil temperature.

5 7. A automotive heat exchanging system as set forth in claim 6 in which said controller controls said shutter to open partially when said oil temperature is at most a predetermined oil temperature, and said shutter to open fully when the oil temperature is more than the predetermined oil temperature.

10 8. A automotive heat exchanging system as set forth in claim 6 in which said heat exchanger includes a condenser for air conditioning, and the controller controlling said shutter to open regardless of the engine temperature and the oil temperature when an inlet pressure of said condenser is more than a predetermined pressure.

15 9. A automotive heat exchanging system as set forth in claim 6 in which further comprises an engine temperature sensor sensing an engine temperature of the coolant and outputting an engine temperature signal, said controller controlling said shutter to open fully for allowing air to
20 pass through said air passage when the oil temperature is more than a predetermined oil temperature and when the oil temperature is at most a predetermined oil temperature and said engine temperature is more than a predetermined engine temperature.

25 10. A automotive heat exchanging system as set forth in claim 9 in which said controller controls said shutter to open partially when said oil temperature is at most a predetermined oil temperature, and said shutter to open fully when the oil temperature is more than the predetermined oil temperature.

30 11. A automotive heat exchanging system as set forth in claim 9 in which said heat exchanger includes a condenser for air conditioning, and the controller controlling said shutter to open regardless of the engine temperature and the oil temperature when an inlet pressure of said
35 condenser is more than a predetermined pressure.

12. A automotive heat exchanging system as set forth in claim 2 in

which said heat exchanger includes a radiator, and said controller controlling said shutter to open fully when said oil temperature is more than the predetermined oil temperature, and controlling the coolant flowing to said radiator to flow to said oil warmer when the engine temperature of the coolant flowing to said radiator is more than said predetermined engine temperature.

13. A automotive heat exchanging system as set forth in claim 12 in which said controller controls said shutter to open partially when said oil temperature is at most a predetermined oil temperature, and said shutter to open fully when the oil temperature is more than the predetermined oil temperature.

14. A automotive heat exchanging system as set forth in claim 13 in which said controller controls said shutter to change opening of said shutter according to at least one predetermined low oil temperatures lower than said predetermined oil temperature.

15. A automotive heat exchanging system as set forth in claim 13 in which said heat exchanger includes a condenser for air conditioning, and the controller controlling said shutter to open regardless of the engine temperature and the oil temperature when an inlet pressure of said condenser is more than a predetermined pressure.

16. A automotive heat exchanging system as set forth in claim 1 in which said heat exchanger includes a condenser for air conditioning, and the controller controlling said shutter to open regardless of the engine temperature and the oil temperature when an inlet pressure of said condenser is more than a predetermined pressure.